Libor Market Model for pricing derivatives on two interest rate curves

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LIBOR Market Model (LMM) has become very popular since its introduction in the late nineteens (see [1]) and has been mainly developed to price derivatives on a single interest rate curve (for caps, swaps and ratches on one currency, for example). It assumes lognormal forward LIBOR rates. In this poster we present a summary of the extension of LMM to the case of derivatives depending on two interest rate curves, as for example options on two currency LIBOR rates or inflation indexed derivatives. In both case we have to identify the underlying factors (and model their dynamics). In the case of two currencies, these are the domestic and foreign forward LIBOR rates plus the forward exchange rate while in the case of inflation, these are the forward LIBOR in nominal and real economies plus the forward inflation rate. Calibration of parameters (volatilities, correlations, etc) requires the use of appropiate derivatives and specific methodologies. We also describe an efficient procedure to simulate the joint dynamics avoiding the use of the path dependent drifts.

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References

[1] D. Brigo and F. Mercurio. *Interest Rate Models: Theory and Practice (with Smile, Inflation and Credit)*, Springer Finance, 2007.